

RESPONSE UNDER 37 C.F.R. § 1.116
EXPEDITED PROCEDURE – Art Unit 3762
Attorney Docket No. 33734-8020US1

Amendments to the Claims:

Following is a complete listing of the claims pending in the application, as amended:

1-124. (Cancelled)

125. (Currently Amended) The method of claim ~~424-127~~ wherein applying electrical stimulation to the stimulation site comprises applying a signal having a voltage of less than about 10V directly to the stimulation site.

126. (Currently Amended) The method of claim ~~424-127~~ wherein applying electrical stimulation to the stimulation site comprises applying a signal having a voltage of approximately 50mV to 5V directly to the stimulation site.

127. (Previously Presented) A method of stimulating the brain of patient to effectuate a neural-function, comprising:

- providing an image of neural activity in the brain of the patient;
- selecting a stimulation site comprising a region at the cortex of the brain of the patient where a change in neural activity is expected to occur to carry out the neural-function; and
- applying electrical stimulation to the stimulation site, wherein applying electrical stimulation to the stimulation site comprises applying a signal that results in an applied voltage approximately 10% greater than an expected resting potential of a population of neurons at the stimulation site.

128. (Previously Presented) The method of claim 127 wherein applying electrical stimulation to the stimulation site comprises applying a signal that results in an applied voltage approximately 10-80% greater than an expected resting potential of a population of neurons at the stimulation site.

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129. (Previously Presented) The method of claim 127 wherein applying electrical stimulation to the stimulation site comprises applying a signal having a voltage effective to raise an expected resting potential of a population of neurons at the stimulation site by at least approximately 10-60% of a difference between the expected resting potential and an action potential for the population of neurons.

130. (Previously Presented) The method of claim 127 wherein applying electrical stimulation to the stimulation site comprises applying a signal having a voltage effective to raise an expected resting potential of a population of neurons at the stimulation site by approximately 10-80% of a difference between the expected resting potential and an action potential for the population of neurons.

131. (Currently Amended) The method of claim ~~424~~127, further comprising applying the electrical stimulation directly to the stimulation site.

132. (Currently Amended) The method of claim ~~424~~127, further comprising applying the electrical stimulation directly to the stimulation site by implanting an electrode proximate to the cortex of the patient and aligned with the stimulation site.

133. (Previously Presented) The method of claim 132 wherein the electrode is placed in direct contact with the pial surface of the brain of the patient.

134. (Previously Presented) The method of claim 132 wherein the electrode is placed at the dura of the brain of the patient.

135. (Previously Presented) The method of claim 132 wherein the electrode is placed in contact with the dura of the brain of the patient.

136. (Currently Amended) The method of claim ~~424~~127 wherein applying the electrical stimulation to the stimulation site comprises applying a signal having a frequency of less than approximately 1000Hz.

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137. (Currently Amended) The method of claim ~~424-127~~ wherein applying the electrical stimulation to the stimulation site comprises applying a signal having a frequency of less than approximately 200 Hz.

138. (Currently Amended) The method of claim ~~424-127~~ wherein applying the electrical stimulation to the stimulation site comprises applying a signal having a frequency of approximately 40-200Hz.

139. (Currently Amended) The method of claim ~~424-127~~ wherein applying the electrical stimulation to the stimulation site comprises applying a signal having a frequency of approximately 50-100Hz.

140. (Currently Amended) The method of claim ~~424-127~~ wherein applying the electrical stimulation to the stimulation site comprises applying a signal with a pulse width of less than about 100 ms.

141. (Currently Amended) The method of claim ~~424-127~~ wherein applying the electrical stimulation to the stimulation site comprises applying a signal with a pulse width of less than about 200 μ s.

142. (Currently Amended) The method of claim ~~424-127~~ wherein applying the electrical stimulation to the stimulation site comprises applying a signal with a pulse width of less than about 100 μ s.

143. (Cancelled)

144. (Currently Amended) The method of claim ~~443-147~~ wherein applying electrical stimulation to the stimulation site comprises applying a signal having a voltage of less than about 10V directly to the stimulation site.

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145. (Currently Amended) The method of claim ~~443-147~~ wherein applying electrical stimulation to the stimulation site comprises applying a signal having a voltage of approximately 50mV to 5V directly to the stimulation site.

146. (Currently Amended) The method of claim ~~443-147~~ wherein applying electrical stimulation to the stimulation site comprises applying a signal having a voltage at least approximately 10% greater than an expected resting potential of a population of neurons at the stimulation site.

147. (Previously Presented) A method of stimulating the brain of a patient to effectuate a particular neural-function, comprising:

selecting a stimulation site comprising a region of the cortex in the brain of the patient where a change in neural activity is expected to occur to carry out the neural-function; and

applying electrical stimulation directly to the cortex at the stimulation site, wherein applying electrical stimulation to the stimulation site comprises applying a signal having a voltage effective to raise an expected resting potential of a population of neurons at the stimulation site by at least approximately 10% of a difference between the expected resting potential and an action potential for the population of neurons.

148. (Previously Presented) The method of claim 147 wherein applying electrical stimulation to the stimulation site comprises applying a signal having a voltage effective to raise an expected resting potential of a population of neurons at the stimulation site by at least approximately 60% of a difference between the expected resting potential and an action potential for the population of neurons.

149. (Previously Presented) The method of claim 147 wherein applying electrical stimulation to the stimulation site comprises applying a signal having a voltage effective to raise an expected resting potential of a population of neurons at the

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stimulation site by approximately 10-80% of a difference between the expected resting potential and an action potential for the population of neurons.

150. (Currently Amended) The method of claim ~~443~~147, further comprising applying the electrical stimulation directly to the stimulation site.

151. (Currently Amended) The method of claim ~~443~~147, further comprising applying the electrical stimulation directly to the stimulation site by implanting an electrode proximate to the cortex of the patient and aligned with the stimulation site.

152. (Previously Presented) The method of claim 151 wherein the electrode is placed in direct contact with the pial surface of the brain of the patient.

153. (Previously Presented) The method of claim 151 wherein the electrode is placed at the dura of the brain of the patient.

154. (Previously Presented) The method of claim 151 wherein the electrode is placed in contact with the dura of the brain of the patient.

155. (Currently Amended) The method of claim ~~443~~147 wherein applying the electrical stimulation to the stimulation site comprises applying a signal having a frequency of less than approximately 1000Hz.

156. (Currently Amended) The method of claim ~~443~~147 wherein applying the electrical stimulation to the stimulation site comprises applying a signal having a frequency of less than approximately 200 Hz.

157. (Currently Amended) The method of claim ~~443~~147 wherein applying the electrical stimulation to the stimulation site comprises applying a signal having a frequency of approximately 40-200Hz.

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158. (Currently Amended) The method of claim ~~443-147~~ wherein applying the electrical stimulation to the stimulation site comprises applying a signal having a frequency of approximately 50-100Hz.

159. (Currently Amended) The method of claim ~~443-147~~ wherein applying the electrical stimulation to the stimulation site comprises applying a signal with a pulse width of less than about 100 ms.

160. (Currently Amended) The method of claim ~~443-147~~ wherein applying the electrical stimulation to the stimulation site comprises applying a signal with a pulse width of less than about 200 μ s.

161. (Currently Amended) The method of claim ~~443-147~~ wherein applying the electrical stimulation to the stimulation site comprises applying a signal with a pulse width of less than about 100 μ s.

162-164. (Cancelled)

165. (Previously Presented) A method of stimulating the brain of patient to effectuate a neural-function, comprising:

- providing an image of neural activity in the cortex of the brain of the patient;
- selecting a stimulation site comprising a region of the cortex of the brain of the patient where a change in neural activity is expected to occur to carry out the neural-function;
- applying an electrical signal directly to the stimulation site, wherein the signal is sufficient to provide a potential to the stimulation site that is approximately 10-80% greater than an expected resting potential of a population of neurons at the stimulation site.

166. (Previously Presented) The method of claim 165, further comprising performing behavioral therapy on the patient related to a body part controlled by the

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particular neural-function while applying the electrical signal directly to the stimulation site.

167. (Previously Presented) The method of claim 165 wherein the patient has an impaired function because of a loss of the particular neural-function, and the method further comprises performing physical therapy on a body part of the patient controlled by the particular neural-function while applying the electrical signal directly to the stimulation site.

168-170. (Cancelled)

171. (Currently Amended) The method of claim ~~170~~ 172 wherein the stimulation site is located in the pre-motor cortex, motor cortex, and/or sensory cortex.

172. (Currently Amended) ~~The method of claim 170~~ A method of stimulating the brain of a patient to effectuate a particular neural-function, comprising:

assessing a symptom associated with stroke;

selecting a stimulation site comprising a region of the cortex in the brain of the patient where neural activity is expected to occur to carry out a neural-function associated with the stroke symptom;

applying electrical stimulation directly to the cortex at the stimulation site; and
wherein selecting a stimulation site further comprises (a) peripherally initiating neural activity associated with the stroke symptom and (b) determining where the neural activity associated with the stroke symptom occurs in response to the peripheral ~~stimulation~~ initiated neural activity.

173. (Cancelled)

174. (New) The method of claim 130 wherein applying the electrical stimulation to the stimulation site comprises increasing the probability of effectuating the neural

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function in response to a combination of both an intrinsic neural input of the patient and the applied electrical signal.

175. (New) The method of claim 130 wherein applying the electrical stimulation comprises applying an electrical signal below a level at which the electrical signal directly causes action potentials to fire in the population of neurons.

176. (New) The method of claim 130, further comprising implanting an electrode at the stimulation site such that the electrode contacts the dura of the brain of the patient, and wherein applying the electrical stimulation comprises applying a signal having a frequency of approximately 40 to 200 Hz, a pulse width of approximately 20 to 200 μ s, and at least one of a voltage and a current such that the electrical signal is below a level at which the electrical signal directly causes action potentials to fire in the population of neurons.